

REMARKS

In the Office Action, the Examiner rejected Claims 1-19 under 35 U.S.C. 103 as being unpatentable over U.S. Patent application publication no. 2004/0123,180 (Soejima, et al.) in view of U.S. Patent application publication no. 2004/0088379 (Aoshima, et al.). Also, the Examiner objected to Claim 29 and indicated that this claim would be allowable if appropriately rewritten.

Applicants are herewith filing a RCE to continue prosecution of this application.

Also, this Amendment is being submitted to amend independent Claims 1, 8 and 14 to better define the subject matters of these claims. Claim 20, which is dependent from Claim 1, is being amended to remove limitations being added to Claim 1, and new Claims 21 and 22, which are dependent from Claims 8 and 14 respectively, are being added to describe optional features of the invention.

For the reasons set forth below, Claims 1-22 patentably distinguish over the prior art and are allowable. The Examiner is, accordingly, asked to reconsider and to withdraw the rejection of Claims 1-19 under 35 U.S.C. 103 and the objection to Claim 20, and to allow claims 1-22.

Generally, Claims 1-22 patentably distinguish over the prior art because the prior art does not disclose or suggest selecting a pair of source and target volumes, and, after this pair has been selected but before copying data from the source volume to the target volume, implementing checks to determine if the selected pair satisfy predefined rules, as described in the independent Claims 1, 8 and 14.

In order to best understand this difference between the present invention and the prior art, and the significance of that difference, it may be helpful to review briefly this invention and the prior art.

The instant invention provides a method and system for paring source and target volumes for the purpose of copying data from the source volume to the target volume. In particular, the invention provides a user-friendly way to do this, using a graphical user interface,

As discussed in detail in the present application, many organizations rely heavily on data and on having quick and reliable access to the data. To achieve this quick and reliable access, mirroring or copying data may be used to minimize the time in which access to data is lost or unavailable. With many presently available techniques to mirror or copy data, a user is required to establish a pair of volumes. Current techniques for doing this may require operator intensive actions to set up the necessary pairs of volumes. These procedures may be time consuming and difficult to learn.

The present invention effectively addresses these issues. Generally, as indicated above, this is done by providing the user with a user-friendly technique to identify the source and target volumes.

To elaborate, with the preferred embodiment of the invention, representations of storage resources are graphically depicted in a single view, and a pair of the storage resources is selected using that single view. Specifically, one of the pair is identified as the source volume and the other of the pair is identified as the target volume.

After this pair is selected but before data are actually copied from the source volume to the target volume, checks are implemented to determine if the pair satisfies predefined rules. If that pair does not satisfy the predefined rules, alert messages are sent to the user. Preferably, a user manually selects the source and target volumes, and, thus, the invention may be practiced to provide a user-friendly procedure that employs the user=s knowledge or expertise, to identify appropriate source and target volumes.

As indicated above, the prior art does not disclose or suggest selecting a pair of source and target volumes, and, after this pair has been selected but before actually copying data from the source volume to the target volume, implementing checks to determine if the selected pair satisfy predefined rules.

For instance, Soejima, et al, describes a failover type cluster system in which data may be copied from a source volume to a destination volume. As discussed in Applicants' previous Amendment, the procedure of Soejima, et al. is directed to selecting the destination volume so that the performance of the destination volume is equal to or higher than the performance of the source volume.

To accomplish this, the Soejima, et al. procedure is used to determine whether two conditions are satisfied. The first condition is whether the performance of the destination volume after a failover is equal to or higher than the performance of the source volume before the failover. The second condition is whether the performance of the destination volume is equal to or higher than the performance of the source volume during the copy. If one or both of these conditions is not satisfied, then the storage apparatus in which the destination volume is defined is modified in configuration to satisfy the condition or conditions.

There are a number of significant differences between the procedure of Soejima, et al. and the present invention. One important difference relates to the general approaches taken by the present invention and Soejima, et al. With the procedure of Soejima, et al. conditions are tested before a source and destination volume are paired, and if those conditions are not satisfied, the destination volume, or the storage apparatus in which that volume is defined, is adjusted. The present invention takes a very different approach. In particular, with the instant invention, the checks are implemented to determine if the pairing satisfy predefined rules after the source

and target volumes are selected and before copying data from the source volume to the target volume.

As Applicants have previously discussed, the approach of the present invention relies on the knowledge or expertise of the selector, which preferably is the user, to make appropriate selections. Because the knowledge or expertise of the selector is used, rather than a computer program, the selection process does not require a complex computer process. In addition, implementing the checks before data are actually copied is useful because it eliminates time that might be spent copying data into a target volume that, for one reasons or another, is not suitable. This, in turn, might require recopying that data after it is discovered that the original target volume is not appropriate.

Aoshima, et al. also does not disclose or suggest this feature of the invention.

Aoshima, et al. discloses a graphical user interface to help a user manage operations on volume pairs, including the mounting of a volume to a host, and the splitting of a volume pair. The user selects a host, specifies that a volume pair be created, and designates the backup host to which the secondary volume is to be mounted.

Aoshima, et al. was cited for its disclosure of a single view that shows storage resources including a source volume and a target volume. This reference, though, does not teach the type of checking that is done with the present invention – that is, implementing the checks after the volume pair has been selected and before data has been copied from the source volume to the target volume.

The other references of record have been reviewed, and these other references, whether considered individually or in combination, also do not disclose or suggest this feature of the instant invention.

Independent Claims 1, 8 and 14 are being amended to describe more expressly the above-discussed feature of the present invention. For instance, Claims 1 and 14 describe the step of selecting a pair of storage resources using a single view that graphically depicts representations of the storage resources, including identifying one of said pair as the source volume and identifying the other of the pair as the target volume. Claims 1 and 14 describe the additional step of, after the pair has been selected and before copying any data from the source volume to the target volume, implementing checks to determine if the selected pair satisfies predefined rules.

Claim 8 is drawn to a system for pairing source and target volumes for the purpose of copying data from the source volume to the target volume. Claim 8, specifically, describes means for selecting a pair of storage resources using a single view that graphically depicts representations of the storage resources, including identifying one of said pair as the source volume and identifying the other of the pair as the target volume. Claim 8 also describes means for implementing checks, after the pair has been selected and before any data has been copied from the source volume to the target volume, to determine if the selected pair satisfies predefined rules.

In light of the above-discussed differences between Claims 1, 8 and 14 and the prior art, and because of the advantages associated with those differences, these claims patentably distinguish over the prior art and are allowable. Claims 2-7 and 20 are dependent from, and are allowable with, Claim 1. Similarly, Claims 9-13 and 21 are dependent from Claim 8 and are

allowable therewith; and Claims 15-19 and 22 are dependent from, and are allowable with, Claim 14.

For the reasons set forth above, the Examiner is respectfully asked to reconsider and to withdraw the rejection of Claims 1-19 under 35 U.S.C. 103, and the objection to Claim 20, and to allow Claims 1-22. If the Examiner believes that a telephone conference with Applicants=Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully submitted,

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